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HOW ASPHALT IS "MINED" IN TRINIDAD

This British West Indian possession has a seemingly inexhaustible supply of a material which is used throughout the world for street paving. As fast as the asphalt is removed from the surface of the pitch lake new asphalt wells up and takes its place (See Bulletin No. 5).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Adrianople: Where Dobbin Stages a Comeback

DOBBIN, who has been somewhat of a nuisance to modern, speedy traffic, comes into his own in at least one of the world's large cities—Adrianople (Edirne), Turkey, where, in a burst of patriotism and economy, motor vehicles have been banned.

No motor vehicles now are allowed to operate within the Adrianople city limits. The twofold aims of the ban are to replace imported cars with home-manufactured carriages, and to sell home-grown oats in place of foreign gasoline.

A City of the East in Europe

Startling would be such a change in many of the large cities of the world, but Adrianople history is replete with events much more startling. Since Hadrian rebuilt the city in the second century, it has risen to envious heights among Turkish cities in commercial and political importance. It also has been engulfed in many periods of distress, as is its present lot.

Adrianople lies on the banks of the Maritza and Tunja Rivers, 137 miles northwest of Constantinople on the railroad which connects the famous old Turkish capital with Belgrade (Beograd), Sofia and Salonika (Thessalonike). Commerce that passed between the Balkans and other portions of Europe and Turkey made Adrianople a great market and distributing point. Tariff barriers set up by the Balkan states and emigration of the city's population—the Turks eastward and the Greeks westward—have been charged with the more recent depression of the city's commercial importance.

If visitors to Adrianople were unaware of its location on the map, a tour of the city would lead them to believe that they were east of the Bosporus, for a marked oriental atmosphere prevails. Caravans arrive as they do in Damascus; dusty, ruddy-skinned caravan men mingle with the street crowds, peering into windows where a colorful array of oriental carpets, shawls, bric-a-brac and other eastern merchandise predominates; lofty cypress trees poke their uppermost limbs above the conglomeration of red roofs, and mosque domes dominate the irregular skyline much as they do in Brusa, while muezzins call the faithful Moslems to prayer from tall white minarets which point fingerlike to the sky.

Commercial Glamor Gone

As one peers into Adrianople shops, guides decry the fact that their city is not what it once was. Before the World War, they will tell the visitor Adrianople shops displayed handsome pieces of Austrian crockery, artistic German iron pieces, fancy French jewelry, and English textiles. And during a shopping tour, the tones of an American phonograph compete with the loud bickering of shopkeepers and purchasers and the boisterous calls of street venders.

Although the city now is quieter, its population has diminished from 85,000 to 40,000 since 1905; and things Turkish appear to be moving eastward, Adrianople continues to hang on to a certain commercial prestige. Raw silk from near-by mulberry tree plantations, cotton, opium, rosewater, attar of roses, wax, and Turkey-red dye are exported, and the city still has a pride in fine wines produced from grapes from neighboring vineyards.

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AN OASIS MARKET ON THE EDGE OF THE DESERT NEAR TRIPOLI

When the tribesmen of this Italian colony gather to trade they are most particular about the meat they buy. In the butchers' section, where camel meat, beef, mutton and goat are offered for sale, a supply of meat "on the hoof" is always available (See Bulletin No. 3).

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Wedge-Shaped Istria, Italy's "Boot Strap"

LAKE ARSA, in the Istrian Peninsula, has been wiped off the map of Italy. With the explosion of 24 mines in a new drainage canal and tunnel under Mount Chersano, the waters of the former marshy and malarial Arsa Valley were drained recently into the Adriatic Sea. New farmland will replace the lake.

Wedge-shaped Istria, at the head of the Adriatic, naturally suggests a "boot strap" when one regards the boot outline of Italy on a large-scale map.

Recalls Coup at Fiume

While it is situated near the Italian-Yugoslavian border, between Trieste and Fiume, the Istrian Peninsula is not of great importance commercially or industrially, but its history unrolls a stream of highly interesting reminders of past civilizations, and its name recalls the post-World War coup of Gabriele D'Annunzio, the poet aviator, at Fiume, which helped to gain this former Austrian territory for Italy.

The civilization of the peninsula is ancient. Ionians from rich and cultured Miletus settled colonies there in the ninth century B. C., and, in 735 B. C., the Corinthians followed them. The sunny culture of the Greeks once blossomed all along these shores, nurtured its artists here, built its temples, and at last gave way before the Celts, who arrived about the fourth century B. C.

When the Romans were forced to crush the pirates of the North Adriatic, Istria fell under their domination, about 177 B. C. Following an uprising, the Romans thoroughly subdued the land in 128 B. C., and, in 127 B. C., 14,000 Roman colonists were settled there. Its wines and olive oil are frequently mentioned in Roman writings.

Olives, Figs and Grapes Chief Crops

Through the Dark Ages and well into the Middle Ages, Istrian land was in the vortex of the struggle between the empires of the East and West, and, later, between Byzantium, the German powers of the North and the rising commercial cities of Italy.

Istria, the ancient Histria, containing, with its neighboring islands, 1,912 square miles, forms part of the modern Italian province known as Pola. The name Istria is derived from "Ister," which is the Greek name for the Danube. The ancients believed that the Danube River discharged part of its water into the Adriatic near this rocky peninsula. Its coastline is well indented, but the shores in much of their extent are steep and forbidding, and are exposed to the heavy dry winds peculiar to the upper Adriatic. Mountainous rock masses cross the land from north to south, culminating in Monte Maggiore, about 4,600 feet high.

Olives, figs, melons and wheat are cultivated in the region, and Istria's grapes and wine are famous. There is little garden, though considerably rich pasture land, and the forests of the peninsula supply cork, gallnuts, and timber for shipbuilding. Its fisheries are valuable, and it has a small mineral yield—coal, alum and salt. There are few local industries, except the building of ships and the recovery of salt from sea water.

It is as a land of ports and possible commercial and military naval bases,

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Adrianople came into its own in 1361 when Murad II took residence there, and for a century it remained the seat of Turkish Sultans. Then Constantinople fell and Adrianople was shorn of its political importance. Bulgarians, Turks, and Greeks have all had a hand in governing the city from time to time since 1913, but in 1922 it was returned to Turkey.

Note: For supplementary reading and pictures of Turkey see: "Looking in on New Turkey," *National Geographic Magazine*, April, 1932; "Summer Holidays on the Bosporus," October, 1929; "Turkey Goes to School," January, 1929; "Seeing 3,000 Years of History in Four Hours," December, 1928; "The Kizilbash Clans of Kurdistan," October, 1928; "Skirting the Shores of Sunrise," December, 1926; "History's Greatest Trek," November, 1925; "From England to India by Automobile," August, 1925; "Crossing Asia Minor, the Country of the New Turkish Republic," October, 1924; "East of Constantinople," May, 1923; and "Constantinople To-day," June, 1922.

Bulletin No. 1, March 20, 1933.

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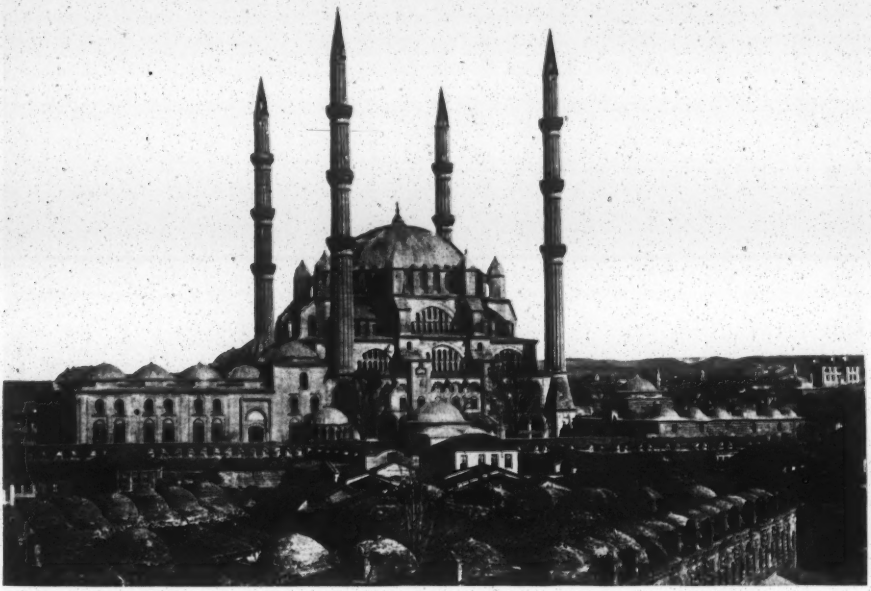

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THE 16TH CENTURY MOSQUE OF THE SULTAN SELIM II: ADRIANOPLE

Once a prosperous city of 85,000 inhabitants, Adrianople has suffered many reverses since the Balkan wars of 1911-1913. To-day it is a forlorn outpost of Turkey-in-Europe.

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Murzuch—A Desert City with Too Much Water

DID man originate in the heart of the Sahara? A party of Italian scientists, seeking traces of the beginning of the human race in the Fezzan region of Tripoli, recently came upon giant representations of the Mauretanian bull believed by many to exist only in the fancy of Herodotus, the father of history, who admitted his accounts of them were based on stories handed down from distant times.

The famed Mauretanian bull, as described by Herodotus, always walked backward while eating. Enormous horns, which became entangled in the bushes, made reverse grazing necessary. The images found on the Fezzan rocks bear out this 150,000-year-old legend.

Region Recently Subdued by Italians

While the Fezzan region of the Sahara is directly on the camel caravan routes between Tripoli and the Sudan, and within the wide swath of desert long claimed by Italy, only recently has it been occupied by Italian patrols. Murzuch, chief city of the area, was captured from desert tribes just three years ago.

Murzuch was nearly 200 years old when Columbus discovered America, but some makers of world maps still ignore it. The city can easily be located, however, by drawing a line due east from Miami, Florida, and another line due south from Naples, Italy. These lines will intersect within the shadow of Murzuch's wall.

Travelers must choose one of two ways to reach Murzuch—by airplane or by caravan. A railroad company has boldly thrust steel rails from Tripoli southward toward the town, but the line halts after it has traversed 60 miles of almost barren terrain. The remaining 400 miles to Murzuch are sand-swept wastes infrequently dotted by small oases.

Murzuch natives will tell you that they live in a desert city where there is too much water. The city lies in the so-called Hofra depression of the Sahara in which water is obtained from shallow wells. Excess water in the salt marshes of the neighborhood offers splendid breeding places for mosquitoes that harass the natives. Malaria takes its toll annually, and those who do not succumb to the disease are left in a weakened condition and are easy prey to other diseases.

To the weary desert traveler Murzuch is a welcome sight, yet its fortress-like wall presents a somewhat hostile aspect. Inside the wall the visitor is welcome, for the natives exist on trade with travelers. Here the caravans replenish their supplies as well as "hire and fire" camel men.

While the marsh is a nuisance to the natives, it furnishes nearly all the building supplies for the town. The high wall is of the marsh mud, and the flat-roofed, one-story structures that line the narrow lanes within the wall are of the same material. Odd as it may seem for a desert town, when it begins to rain the inhabitants begin to pray, and the harder it rains the harder they pray. About once in a generation Murzuch is nearly washed away. This perhaps accounts for the lack of ancient monuments on its site.

Main Street Is City's Meeting Place

When Murzuch is awake, most of its inhabitants are to be found in the main street. Here employer seeks employee, friend meets friend, loafers sprawl, professional letterwriters ply their professions, fakirs gather in coins of the

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however, that Istria is most desirable. The shipping of its harbors before the World War amounted to more than 7,000,000 tons annually. Pola, at the apex, was an important naval base of Austria-Hungary.

The population of Istria is about 300,000, 40 per cent of whom are Serbo-Croats and 34 per cent Italians.

Note: For supplementary references see "Jugoslavia—Ten Years After," *National Geographic Magazine*, September, 1930; "Dalmatian Days," January, 1928; "From England to India by Automobile," August, 1925.

Bulletin No. 2, March 20, 1933.

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SIESTA TIME IN THE FIUME PAIL AND BARREL MARKET

For a short time after the World War, Fiume, around the corner from the Istrian peninsula, enjoyed a distinction similar to that of Danzig; it was a Free City under the League of Nations and was supposed to serve the joint interests of Italy and Yugoslavia. In January, 1924, however, the two countries agreed that Fiume should go to Italy. Fiume was the scene of D'Annunzio's spectacular exploit.

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Diamonds as Windows, New Use for "Sparklers"

ANOTHER use has been found for diamonds, perhaps the most adaptable of all gems. Science now employs pure diamonds as tiny panes in high-pressure chambers.

Pumps which can produce pressures up to nearly half a million pounds per square inch would blow out the thickest glass, but diamond windows have been found to survive pressures that sometimes blow up the thick walls of steel cylinders themselves.

A Cube the Size of an Average Man

While commercial uses for diamonds are on the increase, the diamond market is in the doldrums because ornamental demand has fallen off with the times. Even in a peak year, however, bulk does not figure in world diamond production. If all the diamonds mined in 1929, for instance, could be made into a single cube, it would be about the height of an average man, weighing approximately a ton and a half.

In 1930 more than half a million carats of diamonds, valued at over $30,000,000, entered the country. Were the entire diamond holdings of the United States that year divided equally among the nation's population, each family would own between $150 and $200 worth of diamonds.

Diamonds, a close relative of coal, have been found in all the continents. One of the earliest known sources of the world's diamond supply was India, and a few of the gems are still mined there.

Next to South Africa in importance as a diamond producer to-day is Brazil. Once 20,000 miners dug in Brazil's diamond fields, but the greater richness of the African mines and the greater ease of recovering the stones in Africa finally eclipsed Brazilian operations.

Brazil, however, still exports diamonds, and so does British Guiana, the other important source of the gem in South America.

This Country Not an Important Producer

Most of the other diamond fields are in out-of-the-way places. In the East, Borneo, Australia, and Tasmania produce some diamonds, and a few have come out of Siberia.

Neither Europe nor the United States figures importantly in mining operations, although diamonds have been found in the Ural Mountains of Russia and in Lapland, and small stones have come to light in alluvial deposits in various parts of the United States.

While the employment of the diamond in industry is by no means new, research engineers in the last few years have found many additional uses for a substance which is so hard that it may be used for bearings and drills where ordinary materials would quickly break down.

Wire Ten Times as Fine as Human Hair

In watches, chronometers, electric meters, and other precision instruments and laboratory apparatus, diamond bearings long ago proved their worth. Now

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travelers, and beggars beg, while venders, children, shopkeepers and purchasers all join in a din of chatter and laughter.

A Picture Study in Brown

In the street crowds are natives of monotonous Murzuch brown. Their brown skin harmonizes with the brown walls, brown houses, and brown camels, all included in the panorama of Murzuch against the brown dust of the town's street. The facial color scheme also includes Sudan blacks and the lighter-skinned Berbers.

The Mohammedan women laugh as much as they like, go into the streets without stirring the wrath of the Moslem priests, and do not wear veils. Their bright-colored, loose-fitting frocks, large earrings, heavy bangles and anklets, henna-dyed hands, coal-black eyes and shining white teeth add the only touch of color to drab Murzuch, for most of the men are clad only in white turbans and sheetlike desert garb.

Note: See also "Cirenaica, Eastern Wing of Italian Libia," *National Geographic Magazine*, June, 1930; "Tripolitania Where Rome Resumes Sway," August, 1925; and "Here and There in Northern Africa," January, 1914.

Bulletin No. 3, March 20, 1933.

© *Wide World Photograph*

TRIPOLI WAS ONCE A ROMAN COLONY

Under the shifting sands of this great desert area where modern Rome has again resumed rule are scores of interesting remains of past civilizations ranging from the Phoenicians of Sidon to the Carthaginians, Vandals, Byzantines and Arabs. Above is a corner of the public bath in the long-buried Roman city of Leptis Magna, near the present Mediterranean port of Homs. On the left is a mutilated statue of Apollo, the god of manly youth and beauty, and on the right stands Aesculapius, the god of healing. In some respects Leptis Magna rivals Pompeii.

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Trinidad, "End of the Line" in the West Indies

MENTION Trinidad and the next thought is "asphalt," because this most southerly island of the West Indies is an important producer of the material that helps to smooth city pavements and highways. But a Department of Commerce report says that Trinidad also now has a lime oil industry.

Half of the Island's 70,000 to 80,000-barrel annual production of green limes is still marketed abroad as fresh fruit, but the rest of the crop, and some imported from the island of Dominica, is made by hand into lime oil, which is used for flavoring in cordials and confectionery.

A Bit of the Orient To-day

The British Island of Trinidad, which barely escapes being a part of South America, affords a close-at-home opportunity to study the Orient. Columbus' mistake has been made the truth. If he landed again on Trinidad he would meet true East Indians as he thought he did when his vessel first touched land in the Western Hemisphere, and the Red man was given his incongruous name, "Indian." For to this island thousands of Hindus have been brought, and they have made large parts of the country miniature copies of their home land.

Trinidad has been called "one of the most favored, most beautiful and most interesting isles in the world," and whether the visitor of to-day be a naturalist, an artist, an ethnologist, a business man, or an ordinary garden variety of tourist he will probably find the phrases accurate. To begin with, the soil is exceedingly fertile. Though in the tropics, the island has a pleasant climate, for it is in the trade wind belt and is covered with hills which catch the breeze. There is abundant moisture, and, thanks to importations from all parts of the world, dating back in many cases several centuries, practically every plant the tropics know grows there luxuriantly.

Nor does Trinidad lack a world wonder. Near the island's southwestern extremity is the famous Lake of Asphalt, from which has come paving for many of the cities of America and Europe. More than 100 acres are covered by the asphalt, like a huge paved field, though the area is dotted with some pools of muddy water and a few patches of vegetation. One may walk upon the material, but he must keep moving or his feet will slowly sink into it. Negro laborers dig the asphalt, and a long cableway of buckets transports it to the near-by coast, where it is dumped into freight steamers.

Cacao Plantations in Uplands

This is one of the most unpleasant parts of Trinidad, low, sizzling hot, and odorous; for a sulphurous smell is constantly rising from the asphalt. There are other low portions of the island given over to swamps, alligators, and malaria, but the greater portion of the area is either well-drained lowland or rolling hills. Where the latter have not been cleared, the close-packed vegetation sweeps up in a vivid green mantle from the seashore to highest pinnacle. It is on the large cacao plantations in the rolling uplands that the pleasantest rural conditions are found.

Port of Spain, capital and metropolis of Trinidad, is one of the busiest cities of the Caribbean, and one of the most delightful to live in if one takes the ordinary precautions of the tropics from the hottest rays of the sun. The popula-

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holes are drilled in small diamonds, and slender wires of platinum, silver, gold, and other rare metals are drawn through them.

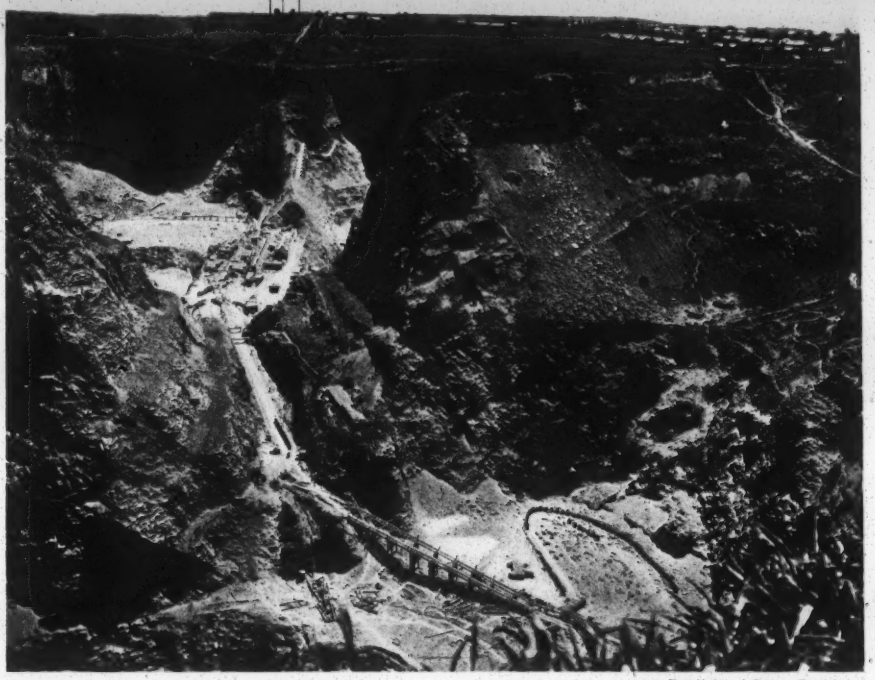
Tungsten pulled through diamond dies has come out in an almost invisible strand ten times as fine as human hair. These wires, coiled 1,390 turns to the linear inch, form springlike filaments for electric light bulbs. The hole in the diamond die is so tiny that a magnifying glass is needed to aid workers who thread the tungsten into it.

Other industrial uses for diamonds range from drills for glass, porcelain and similar substances to cutting edges for rock drilling and sawing.

Only the imperfect and less valuable stones are used in industry. The "patrician diamonds," as in ages past, go into jewelry.

Note: See also "Under the South African Union," *National Geographic Magazine*, April, 1931; "Cairo to Cape Town Overland," February, 1925; and "Through the Back Doors of Belgium," May, 1925.

Bulletin No. 4, March 20, 1933.



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HERE THE WORLD'S LARGEST DIAMOND WAS FOUND

Although this pit, the Premier Mine, 25 miles east of Pretoria, Union of South Africa, is not as famous as the defunct Kimberley, it is even larger, and, during the last quarter of a century, has yielded more than 6½ tons of diamonds. Its most noted stone was the Cullinan, the largest diamond ever discovered, which was later cut into nine large stones and scores of small ones.

tion of the city is about 69,000, but it is as cosmopolitan as many a city of half a million.

Important British Trade Depot

On the streets one meets Britons, citizens of the United States, Portuguese, Latin Americans, Negroes, Hindus, Chinese, and natives of various mixtures of blood, including that of the old Caribs. Port of Spain's roadstead is constantly crowded with ocean steamers and its huge warehouses are filled with varied goods, for this is the principal depot for trade between Great Britain and the northern countries of South America.

Columbus discovered Trinidad on his third voyage in 1498 and gave Spain its claim on the island which it maintained, with small breaks, until 1797, when a British fleet seized it. It was formally annexed by Great Britain in 1802 and has remained a British possession ever since.

Note: For additional brief references to Trinidad see "Skypaths Through Latin America," *National Geographic Magazine*, January, 1931; "Around the World in the Islander," February, 1928; "How Latin America Looks from the Air," October, 1927; "Sindbads of Science," July, 1927; and "The Haunts of the Caribbean Corsairs," February, 1922.

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"A BIG MUD PIE" THAT SMOOTHS BOULEVARDS

Trinidad's famous "pitch lake," more than 100 acres in extent, has for years yielded a steady income to the colonial government of the island. In the lower left corner is the plant of the company which digs and exports the asphalt; at the upper left, a part of the village built for pitch-lake laborers.